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Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-34. (canceled)

35. (currently amended) A surgery system comprising:

at least one smart instrument, wherein the at least one smart instrument includes a housing, a plurality of LEDs coupled to the housing, a memory circuit having stored information thereon related to the smart instrument, and a first transceiver;[1]

a computer system; and

a sensor system adapted to wirelessly sense the position of the at least one smart instrument and to transmit position information to the computer system, [[;]] wherein the sensor system includes a sensor array [[;]] ~~and wherein the sensor array includes at least three linear CCD cameras~~ comprising a plurality of position sensors adapted to sense the position information from the LEDs of the smart instrument and at least ~~one infrared~~ a second transceiver adapted to communicate wirelessly and bi-directionally with the first transceiver;[2]

wherein the first transceiver on the smart instrument wirelessly transmits the stored information to the second transceiver on the sensor array, and the second transceiver wirelessly transmits a request from the sensor system to the first transceiver for the LEDs to fire independently one at a time in order to be recognized by the surgery system.[3]

36. (canceled)

37. (currently amended) A surgery system, as set forth in claim [[36]] 37, where the information includes calibration information.

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[1] *See*, e.g., specification at page 12, line 19-page 14, line 5; page 16, lines 5-14; and original claims 36 and 51.

[2] *See*, specification at page 10, line 17-page 11, line 9; page 19, lines 11-12.

[3] *See*, e.g., specification at page 36, lines 1-14.

38. (currently amended) A surgery system, as set forth in claim 35, wherein the ~~sensor system uses~~ first and second transceivers use infrared signals.

39. (currently amended) A surgery system, as set forth in claim 35, wherein the ~~sensor system uses~~ first and second transceivers use radio frequency signals.

40. (currently amended) A surgery system, as set forth in claim 35, wherein the ~~sensor system uses~~ first and second transceivers use the IEEE 802.11 communication standard.

41-43. (cancelled)

44. (original) A surgery system, as set forth in claim 35, wherein the computer system includes a monitor.

45. (original) A surgery system, as set forth in claim 44, wherein the computer system is adapted to display a diagram of a patient on the monitor.

46. (original) A surgery system, as set forth in claim 45, wherein the diagram is of one of an image, picture, outline and line drawing of at least a portion of the patient.

47. (original) A surgery system, as set forth in claim 45, wherein the computer system is adapted to display a representation of the at least one smart instrument on the diagram.

48. (original) A surgery system, as set forth in claim 47, wherein the representation of the at least one smart instrument is a line.

49. (canceled)

50. (previously presented) A surgery system, as set forth in claim 35, wherein the computer system includes:

a localizer coupled to the sensor system;

a computer workstation coupled to the localizer; and

a monitor coupled to the computer workstation.

51. (canceled)

52. (currently amended) A surgery system, as set forth in claim [[51]] 50, wherein the localizer is adapted to receive the position information from the sensor system, determine a relative position of each of the plurality of infrared light emitting diodes.

53. (original) A surgery system, as set forth in claim 52, wherein the localizer is adapted to transmit the relation positions of the plurality of infrared light emitting diodes to the computer workstation.

54. (original) A surgery system, as set forth in claim 52, wherein the localizer is adapted to determine a relative position and orientation of the at least one smart instrument as a function of the relative positions of the plurality of infrared light emitting diodes and transmit the relative position and orientation to the computer workstation.

55. (previously presented) A surgery system, as set forth in claim 35, including:

a patient tracking system including a universal tracker device;

wherein the sensor system is adapted to wirelessly sense the position of the universal tracker device and to transmit position information to the computer system.

56. (original) A surgery system, as set forth in claim 55, wherein the universal tracker device includes a validation point.

57. (original) A surgery system, as set forth in claim 56, wherein the validation point is used to validate the at least one smart instrument.

58. (currently amended) A surgery system, comprising:

at least one smart instrument comprising a first housing and a first transceiver and a first plurality of independently fireable lights coupled with the first housing;

a patient tracking system including a universal tracker device comprising a second housing and a second transceiver and a second plurality of independently fireable lights coupled with the second housing; [4]

a localizer;

a computer workstation coupled to the localizer;

a monitor coupled to the computer workstation; and

a sensor system coupled to the localizer and being adapted to wirelessly sense the position of the at least one smart instrument and the universal tracker device and to transmit position information to the localizer, [[;]] wherein the sensor system includes a sensor array~~; and wherein the sensor array includes at least three linear CCD cameras~~ comprising a plurality of position sensors and at least [[one]] a third ~~infrared~~ transceiver adapted to communicate wirelessly with each of the first and second transceivers;

wherein the surgery system cycles consecutively through each of the smart instrument and the universal tracker device, and [5]

wherein for each of the smart instrument and the universal tracker device, the surgery system wirelessly sends a signal identifying the smart instrument or universal tracker device, the smart instrument or universal tracker device wirelessly sends status information to the surgery system, and the surgery system sends a request that the respective smart instrument or universal tracker device fire each of the respective first or second pluralities of lights independently one at a time in order to be recognized by the surgery system. [6]

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[4] *See generally*, page 11, line 21-page 14, line 5.

[5] *See*, e.g., page 21, lines 4-9.

[6] *See*, e.g., specification at page 35, line 18-page 36, line 14.

59. (currently amended) A surgery system, as set forth in claim 58, wherein the first plurality of lights of the at least one smart instrument includes a first plurality of infrared light emitting diodes and the second plurality of lights of the universal tracker device includes a second plurality of infrared light emitting diodes, wherein the localizer is adapted to receive the position information from the sensor system and to determine a relative position of each of the first and second plurality of infrared light emitting diodes.

60. (previously presented) A surgery system, as set forth in claim 59. wherein the localizer is adapted to transmit the relative positions of the first and second plurality of infrared light emitting diodes to the computer workstation.

61. (original) A surgery system, as set forth in claim 59, wherein the localizer is adapted to determine a relative position and orientation of the at least one smart instrument and the universal tracker device as a function of the relative positions of the first and second plurality of infrared light emitting diodes and transmit the relative position and orientation of the at least one smart instrument and the universal tracker device to the computer workstation.

62. (currently amended) A surgery system, comprising:

at least one smart instrument;

a patient tracking system including a universal tracking system having a validation point and being coupled to the patient tracking system, wherein the universal tracking system includes a hall effect switch that is affected by proximity to the patient tracking system and a wireless communication transceiver;[7]

a localizer;

a computer workstation coupled to the localizer;

a monitor coupled to the computer workstation; and

a sensor system adapted to wirelessly sense the position of the at least one smart instrument and to transmit position information to the localizer, wherein the validation point is used to validate the at least one smart instrument, [[;]] wherein the sensor system includes a sensor array, ~~; and wherein the sensor array includes at least three linear CCD cameras and at least one infrared transceiver~~; and

wherein the universal tracking system transmits a status of the hall effect switch to the surgery system, whereby the surgery system determines that the universal tracking system is being used as part of the patient tracking system.

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[7] *See*, e.g., specification at page 14, lines 9-12.

63. (currently amended) A surgery system, comprising:

at least two smart instruments, wherein each smart instrument comprises a housing, a plurality of LEDs coupled with the housing and adapted to fire independently, and a first transceiver;

a computer system; and

a sensor system adapted to wirelessly sense the position of the at least two smart instruments and to transmit position information to the computer system, [[;]] wherein the sensor system includes a sensor array~~; and wherein the sensor array includes at least three linear CCD cameras~~ comprising a plurality of position sensors and at least [[one]] a second ~~infrared~~ transceiver; and

wherein, for each of the smart instruments in consecutive order, the respective second transceiver wirelessly transmits an instruction from the sensor system to the respective first transceiver thereof that causes the LEDs thereof to fire independently one at a time in order to be recognized by the surgery system.

64. (original) A surgery system, as set forth in claim 63, wherein the computer system includes a monitor and wherein the computer system is adapted to display a diagram of a patient on the monitor.

65. (original) A surgery system, as set forth in claim 64, wherein the computer system is adapted to display a representation of one of the at least two smart instruments on the diagram.

66. (original) A surgery system, as set forth in claim 65, wherein the one of the at least two smart instruments is in use.

67. (original) A surgery system, as set forth in claim 66, wherein the computer system is adapted to alternatively determine the position of the at least two smart instruments.

68. (currently amended) A surgery system, as set forth in claim [[66]] 63, wherein ~~the computer system is adapted to only determine the position of the one of the at least two smart instruments~~ the surgery system cycles successively through all of the smart instruments that are active and temporarily sets the number of LEDs to be activated on an unused active smart instrument to zero.[8]

69. (currently amended) A surgery system, comprising:

a sheet of flexible material having a plurality of markers on a first side;

a smart instrument adapted to be placed in contact with the plurality of markers, wherein the smart instrument includes a housing and coupled with the housing a first transceiver and a plurality of LEDs adapted to fire independently;

a computer system; and

a sensor system adapted to wirelessly sense the position of the at least one smart instrument and the position of the sheet and to transmit position information to the computer system;

wherein the sensor system includes a sensor array; and

wherein the sensor array includes a plurality of sensors ~~at least three linear CCD cameras~~ and at least [[one]] a second ~~infrared~~ transceiver;

and wherein the second transceiver wirelessly transmits an instruction from the sensor system to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system.

70. (original) A surgery system, as set forth in claim 69, wherein the flexible material is a mesh.

71. (original) A surgery system, as set forth in claim 69, wherein the sheet of flexible material includes a layer of adhesive on another side.

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[8] *See generally*, page 36, lines 17-24.

72 and 73. (canceled)

74. (currently amended) A surgery system, comprising:

at least one smart instrument;

a validation tool, the validation tool including:

a base;

four columns coupled to the base;

at least one validation point; and,

a plurality of infrared light emitting diodes coupled to the base; and,

a computer system;

a sensor system adapted to wirelessly sense the position of the at least one smart instrument and the validation tool and to transmit position information to the computer system, wherein the validation tool is adapted to validate the at least one smart instrument;

wherein the sensor system includes a sensor array; and

wherein the sensor array includes at least three linear CCD cameras and at least one ~~infrared~~ transceiver.

75. (currently amended) A surgery system, comprising:

at least one smart instrument;

a calibrating tool, the calibrating tool including:

a base;

four columns coupled to the base;

a plurality of infrared light emitting diodes coupled to the base;

an upper plate and a lower plate slidably coupled to the four columns, the upper and lower plates each including an aperture for receiving the smart instrument during a calibration process;

a computer system; and

a sensor system adapted to wirelessly sense the position of the at least one smart instrument and the calibrating tool and to transmit position information to the computer system, wherein the calibrating tool is adapted to calibrate the at least one smart instrument;

wherein the sensor system includes a sensor array; and

wherein the sensor array includes at least three linear CCD cameras and at least one ~~infrared~~ transceiver.

76. (currently amended) A surgery system, comprising:

a smart instrument being composed of a flexible material[[;]] and having a plurality of light emitting diodes on a first side of the flexible material and a wireless transceiver coupled with the flexible material;[9]

a computer system; and,

a sensor system adapted to wirelessly sense the position of the plurality of light emitting diodes and to transmit position information to the computer system, [[;]] wherein the sensor system includes a sensor array~~; and wherein the sensor array~~ that includes ~~at least three linear CCD cameras~~ a plurality of position sensors and at least [[one]] a second ~~infrared~~ transceiver; and

wherein the sensor system wirelessly transmits an instruction from the second transceiver to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system.[10]

77. (original) A surgery system, as set forth in claim 76, wherein the computer system is adapted to determine the contour of the smart instrument and perform a surface matching operation with a known contour.

78. (original) A surgery system, as set forth in claim 76, wherein the smart instrument is part of a dynamic reference frame.

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[9] *See*, e.g., specification at page 28, lines 10-11, which describes a sheet of flexible material that "is a smart instrument" having light emitting diodes, and at page 10, line 8-page 11, line 9, which describes smart instruments as communicating wirelessly, such as with transceivers.

[10] *See*, e.g., specification at page 36, lines 1-14, which describes a system with a smart instrument that fires off each LED one at a time in order to be recognized.

79. (currently amended) A surgery system, comprising:

at least one smart instrument, having a housing, and coupled with the housing at least one control button, a plurality of LEDs, and a first transceiver;

a computer system; and,

a sensor system adapted to wirelessly sense the position of the at least one smart instrument and to transmit position information to the computer system and to transmit status information of the at least one control button, wherein the computer system is adapted to perform an operation based on the activation of the control button and the position of the at least one smart instrument, [[;]] wherein the sensor system includes a sensor array~~; and wherein the sensor array~~ that includes at least three linear CCD cameras and at least [[one]] a second ~~infrared~~ transceiver; and

wherein the sensor system wirelessly transmits an instruction from the second transceiver to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system.

80. (new) A surgery system, as set forth in claim 35, wherein the plurality of position sensors includes at least three linear CCD cameras.[11]

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[11] *See*, e.g., *supra*, note 2.